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ABSTRACT

The goal for the second year of the Colorado Mexican-American Student Program was to motivate and inspire a selected number of high school students to seek a college education. Students for the program were selected according to 5 criteria: (1) Mexican American ancestry, (2) promising academic potential, (3) completion of grade 10, (4) average or above average achievement in academic or social activities, and (5) some degree of underachievement. Program changes for the second year included more teacher and counselor involvement in student selection; an increase in the number of students participating (from 21 to 26); payment of the program director's salary by the Denver Public Schools; and administration of various vocational interest tests administered to the students. The 4-week summer session consisted of discussion groups, lectures, and laboratories on such topics as astronomy, social protest, Hispano history, physics, and psychology. The winter follow-up program consisted of social events and a tutoring program. The document contains a program description and responses of 25 students to an evaluation questionnaire. A related document is RC005904. (PS)

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A SUMMER PROGRAM FOR

HISPANO HIGH SCHOOL STUDENTS

Sponsored by

THE DEPARTMENT OF PHYSICS AND ASTROPHYSICS

UNIVERSITY OF COLORADO

with the assistance of

THE MAX C. FLEISCHMANN FOUNDATTION

and

THE DENVER PUBLIC SCHOOLS

A REPORT FOR THE SECOND YEAR

June 15 - July 10, 1970

by

TONY SALAZAR

RC005905

INTRODUCTION

It is a known fact that college attendance is very low among the disadvantaged minority groups in the United States. In the case of the Hispano population in Colorado, the 1960 census showed that the median level of educational attainment of Spanish-surnamed adult males over 25 years of age was 8.1 years. For Anglo and Negro males it was 12.1 years and 11.5 years, respectively. Nearly 60 percent of the Hispano population had completed less than nine years of schooling and only 2.7 percent had completed college. The Hispano represents 13 percent of the Colorado population.

The reasons for this low educational attainment are many and varied. The Hispano in Colorado has only recently moved to the city from depressed rural environments (where many remain). In that rural environment the sons and daughters were needed to work and earn money to help support the family and consequently had little opportunity for education. Moreover, until recently, there were no colleges or universities within a reasonable distance of these rural areas in southern Colorado. They had little or no contact with colleges or college-educated people, and consequently they had little knowledge of the potential of a college education for bringing about changes in social and economic class.

Drs. Willard Chappell and Robert Williams, faculty members from the University of Colorado, being aware of the above mentioned problem and having knowledge of a motivational program for Mexican American students at the University of Stanford, decided that a similar program could be implemented at the University of Colorado, Boulder campus. So for the second consecutive summer the Department of Physics and Astrophysics sponsored a summer program for Hispano students from North High School, which is located in Denver, Colorado. To motivate and inspire a selected number of students, and to encourage them to seek a college education became the primary goal of the program.

The summer program of 1970 was basically the same as the program of the previous year. However, there were a few changes that will be discussed briefly. There was a sincere desire to give the students more information about different types of colleges, financial aid and career possibilities. Most of the changes made were in this area and will be described in the report.

During the school year there was a small follow-up program with the students of the 1969 summer program. The follow-up consisted mainly of tutoring and a few special events to be described later.

Another change in the program was the method by which the students were selected. During the first year the selection was done by Mr. Salazar, teacher-counselor, with some assistance from other counselors. This year's selections were also made by Mr. Salazar, but this time he worked much closer with all the teachers and counselors. He also accepted the recommendations made by students who had been part of the first program.

Another important and noticeable change was that twenty-six students were given permission to participate, in comparison to twenty-one students who took part in the program the first summer. During the planning stages it was decided that only twenty-four students should be chosen, but after the final selection had been made, two students showed a great deal of interest in the program and expressed a strong desire to take part. The two students offered to attend without any of the benefits, such as 5 hours credit, a certificate of attendance, or the honorarium. The two students were given permission to attend and they gained a great deal from the experience. On the last day they were informed that they also would receive the benefits mentioned above.

Still another change was that the Denver Public Schools agreed to pay the salary of the director of the program. The director is usually an employee of the Denver Schools and assumes those responsibilities that will give the faculty of the Physics Department time to concentrate on the students and subject matter of the program. Mrs. Fernie Moore, Coordinator of the Youth Motivational Program in the Denver Schools, was the director during the first summer, but she was unable to accept the position the second year. Mr. Tony Salazar, teacher-counselor at North High, expressed an interest in the job and since he was acquainted with the Hispano students and the North High community he seemed to be the logical successor. Another advantage of hiring Mr. Salazar was that he would be in an excellent position to do the follow-up program during the regular school year. The follow-up activities will be discussed in another part of the report.

The laboratory program experienced a few changes or additions, but they were minor since the lab sessions that were held in the afternoons were considered to be the real strength of the program. The lab leaders introduced some new activities and experiences for the students. The students all seemed to be in agreement that the sessions in the telescope, cyclotron, and photography laboratories were the most interesting and favorite of all activities. Descriptions of the laboratory groups can be found in another part of the report.

Rivaling the lab sessions in popularity were the discussion groups. The discussion groups were interesting because of the variety of activities that were included. The lecture period was also accepted quite well by the students, and weekly evaluations indicated that the students found the lectures interesting, informative and enlightening.

All the students selected for the program were enrolled at North High School, where the total enrollment of Hispanos is over 33 percent. North High seemed to be the place to recruit students and it did offer some advantages. The transportation problem was easier to solve since all the students selected lived in the same general area. Also, the principal of the school, Mr. Pete Shannon, was very sympathetic with the program and gave his approval and encouragement. He was in agreement that the participants should receive five hours credit in science for their attendance in the program. Similar credit was given to the students who attended the previous year, and this was arranged when the superintendent of the Denver Public Schools gave his approval. Mr. Shannon also assured us that records belonging to the students could be made available if they were needed. The records were to be used for the purpose of evaluating the program, and the progress or lack of progress by the students.

Mr. Salazar met with the students on several occasions, both on an individual basis as well as in groups. The meetings were always held at North High and usually for the purpose of explaining to the students the type of program they would be attending, and the benefits they would derive from such a program. It was explained that their responsibility was to learn and gain as many experiences from the college type education they were to be exposed to. The twenty-six participants showed an eagerness to learn at all times, and they developed a group cohesiveness that was unbelievable. To our knowledge not a single discipline problem arose, nor were there any personality clashes.

Student Selection

The students selected for the first year program represented a broad spectrum to allow us to pinpoint the types of students who would gain the most benefit from the program. Although this was not easy to do we did detect some trends by noticing positive personality changes and improvement in grades among certain students. We found that in general the largest positive changes were experienced by those students who had at least some motivation before they entered the program. Thus the students who had grade point averages between a C and B showed the most positive change in their grades, whereas the students who had grade averages of D or less showed little or no gain. (Only one student had grades higher than a B average and even she went up a half a grade point last year.) It would seem that the D students had problems that were so serious that they could not be helped by this program as it now stands.

In general, then, the criteria for selection were:

1. Hispano ancestry
2. Promising academic potential
3. Completion of the tenth grade

4. Average or above average achievement in academic or social activities

5. Some degree of underachievement

The fourth criterion was new, although it probably has some correlation with the second one.

The selection was based on teacher, counselor, and student recommendations plus the personal knowledge of the director of the program. Although no official announcement of the program was made, many students asked if they could take part. They apparently heard of the program from students who had enrolled the year before.

We also took back one of the students who had been in the program the year before. This boy was the one who seemed to benefit the most by the first summer and we thought he would also benefit the most by a second summer. At the moment he is the most obvious example of the program's success. A year ago when he entered the program he was very withdrawn and so shy he would not interact with other people. By the end of last summer he had developed a great deal. At the end of this summer he was playing his guitar for the girls in the program, and with four girls presented three songs (one of which he wrote) at the banquet. His father told us that he was going to take on another job in order to save money for the boy's college.

We also took on two students who had completed their junior year in school to see what impact we might have on a slightly older student.

Staff

We were particularly fortunate in obtaining three very capable and enthusiastic people for the paid positions of tutors. The tutors were Harry Glaser, Jerry Sullivan, and Gary Parker, with Gary Parker being the only new person in the program. The tutors had particular talents of their own which they used very effectively and everyone involved with the program felt that they were outstanding in their relationship with the students. The entire summer program went very smoothly and a great deal of credit goes to the tutors who kept the students interested and busy with relevant projects.

Volunteers

The program received a great deal of support from the faculty and graduate students. Each of the laboratory groups had at least one faculty member who had overall responsibility. Some of these also gave lectures in the morning. The lectures that took place each morning from 10:30 to 11:45 were given by faculty members of the Physics and Astrophysics department.

Special credit should be given to Professor Allan Franklin who not only gave two lectures but was a leader of a discussion group. He also made himself available to the students at all times, and he was regarded very highly by all the students. Others who assisted and deserve credit were Jim Baur and Pete Brabeck. Jim Baur worked very closely with the faculty-sponsor of the program, and with the director during the planning stages. He was also responsible for setting up the lecture and panel presentations. Pete Brabeck also deserves recognition for his efforts in providing the students with some outdoor activities. One of the activities was a swim-picnic at the Boulder Reservoir. Another activity was a hiking trip in Rocky Mountain National Park on the Sunday following the end of the program.

There were about eight faculty members and 15 graduate students who gave substantial amounts of their time in the planning of the program, supervision of the labs, and the discussion groups. In addition, sixteen other members of the scientific community gave morning lectures and at least 15 other graduate students gave one or several afternoons helping in the labs.

Scholarships

We feel that the scholarships of $120.00 per student played an essential role in the program in terms of inducing students to join and stay with the program. Twenty of the students said they would be working if they hadn't been in the program, and there is ample evidence that they could have found jobs. Many went to work immediately after it ended--some had week-end jobs during the program. Many of those who did not mention work were girls whose usual role is to babysit their siblings.

Transportation

The commercial Denver-Boulder Bus Company provided the transportation for the second consecutive year. The company was very cooperative in working out financial arrangements and other details. There seem to be several advantages over the use of a chartered bus or a school bus (which would be more expensive). These were that if the tutors or graduate students wanted to have a special event such as a hike, after the regular day was over, the students could go back on a later bus. Moreover, some students missed the usual bus one morning but were able to catch another an hour later.

Publicity

The only publicity this year was a news release by the University news service. This contained a description of the program and was carried in several local newspapers.

Mechanics

The first event in the summer program was an orientation meeting that was held at the campus for the parents, students, staff, and volunteer workers. The purpose of the picnic was to get acquainted with the students in an informal setting and to gain the confidence of the parents. Punch, coffee and cookies were served and after refreshments details of the program were explained to the parents and students. They were then taken on guided tours of the campus, the cyclotron, and some of the laboratories in the physics building.

Both the parents and students seemed to be impressed with the program and with the university campus, but the real enthusiasm did not begin to show until the students had been on the campus for a few days. It was during the banquet, the culminating activity, that we began to hear comments from the parents of the student's pleasure in the program. The communication that took place between the parent and student is an excellent reason for having the students commute daily rather than to have them live on the campus for the duration of the program.

SCHEDULE

8:00 a.m.	- Students and Mr. Salazar board bus near North High School
8:45 a.m.	- Bus arrives on campus
9:00 -10:15	- Discussion groups
10:15-10:30	- Break
10:30-11:45	- Lecture - JILA Auditorium
11:45- 1:00	- Lunch at University Memorial Center
1:00 - 3:30	- Laboratory
4:00	- Students board bus on campus
4:40	- Bus arrives at North High School

Discussion Groups

The first daily activity of the program was the discussion groups. Two of the discussion groups had one adult leader and six students, while the other two groups had one adult leader and seven students. Students were asked to report to their groups by 9:00 a.m., and each session lasted approximately one hour and 15 minutes. The groups all had an assigned place to meet, but often they met in private homes or other places that would make their meetings more meaningful.

When the discussion groups were organized they were set up so that each group leader could take advantage of his own specialties. Discussion groups were set up under the following leaders and subject areas.

Group I	Leader...Gary Parker	Topic: Astronomy
Group II	Leader...Harry Glaser	Topic: Photography
Group III	Leader...Allan Franklin	Topic: Rock music, Science & Politics
Group IV	Leader...Tony Salazar	Topic: Hispano history

It was agreed by the discussion leaders that the group sessions should be flexible enough to meet the needs of the students. Consequently, the discussion groups became involved in a variety of activities, and the final outcome was one in which the students gained many new experiences.

The discussion group under Harry Glaser produced a documentary film of the program. Allan Franklin had his group listen to a representative from the Women's Liberation Movement, plus taking his group to observe the UMAS program on the Boulder campus. Gary Parker met with his group after regular hours and gave his group a tour to the campus observatory. The group under Tony Salazar produced a summer school newspaper, The JILA Journal. These and other activities gave the students plenty to think about. A more detailed description of the discussion groups can be found in the following pages.

The discussion groups turned out to be a real asset to the program rather than a place where the students spent an hour or so waiting for the next activity. One student remarked that he had never heard so many interesting things about the Aztec Indians. One group leader felt that one student in his discussion group had real potential in the area of photography. The girls that were exposed to the Women's Liberation Movement were later heard discussing the pros and cons. In the final analysis the discussion groups were extremely successful and should be retained.

Discussion Group I - Astronomy

In the morning astronomy group we began with a discussion of the moon. We studied the sizes, shapes and origins of various structures on the moon, using photographs taken by Ranger satellites. After everyone was instructed on the use of the 10-1/2 inch refracting telescope at the High Altitude Observatory, we observed sunspots, their structure and motion on the solar disk. From this we concluded that the sun rotates. One of the biggest kicks I had all summer was one morning when Harry's group came over to film us for the documentary. I asked my students to explain to his group the phenomenon of solar rotation, and they did a great job. They had indeed been learning.

We also talked about the birth and death of stars, the location of the sun in the Milky Way, and the possibilities of life elsewhere in the universe. We visited the radio astronomy site in north Boulder, a facility run by the University of Colorado for the study of the sun and Jupiter. On June 19, nine students visited the observatory in the evening to observe the moon, Jupiter and its moons, Venus, and the Ring Nebula in the constellation Lyra.

Of course, when I think of the discussion group I remember best the informal discussions we had on all kinds of topics. A few additional non-science things we did were to visit the CU Museum, Sociology 127 (the Contemporary Mexican-American), and the Office of Foreign Study. At the latter we heard about

Vista, the Peace Corps, the Junior Year Abroad program, and study at foreign universities.

Discussion Group III - Rock Music, Science & Politics

Our discussion group dealt primarily with the issue of social protest. Among the examples discussed were the American Revolution, the Irish Rebellion of 1916, the civil rights movement in the United States, and various anti-war movements in history including the recent anti-Vietnam war movement in the United States. There was very little attempt to be systematic in the discussions and the main emphasis was on the students' own views and awareness of these issues. As a method of introducing the subject we used both folk music and current popular songs which dealt with the issues.

Discussion Group IV - Hispano History

The purpose of this discussion group was to provide the students with an opportunity to inquire and learn the history of the southwest, which they may not have had an opportunity to learn during the regular school year. If the students indicated they wanted to talk on another subject, then the discussion group meeting was flexible enough to provide for the change.

At the beginning efforts were made to give the highlights of the history of Spain, Mexico, and the Pre-Columbian Indians. Emphasis was placed on the outstanding achievements and personalities of those periods. Although there seems to have been a great interest in all the histories, there was a particularly strong interest in the Pre-Columbian Indian of Meso-America.

Time was spent discussing and analyzing the problems that exist between the majority and minority people in this country. Words such as ethnic, culture, poverty, discrimination, prejudice and others were brought out and explained.

Three periods were spent visiting other classes on the campus. These classes were sponsored by the United Mexican American Students (UMAS) program. The students found these sessions extremely interesting and had many questions regarding what they had observed. They found many things that they were in agreement with but wanted explanation on other things that they did not understand. The students would have enjoyed returning but time did not permit.

The group also decided that they would like to put out a newspaper that would describe the many activities that had taken place during the four weeks of the summer program. They decided to interview every student and faculty member and get their reaction to the program. The results were interesting and complimentary to the program. The newspaper was made available on the evening of the banquet.

Lectures

Each morning after the discussion group sessions the students attended a lecture on physics, astronomy, or psychology. These lectures were given by volunteers, most of whom were faculty members. A few of the lecturers were members of other scientific institutions in Boulder. The lectures covered a wide range of topics as the list below illustrates.

Mon.	15 June	Hansen, Carl	The Stars Above
Tue.	16	Bartlett, Albert	The Nobel Prize
Wed.	17	Levine, Judah	Gravity Tides
Thu.	18	Kelley, George	Social Psychology
Fri.	19	Franklin, Allan	Clocks, Mirrors, and Antimatter
Mon.	22 June	Dreitlein, Joseph	Magnetism
Tue.	23	O'Sullivan, Wm.	Superfluidity
Wed.	24	Kamper, Robert	Low Temperature Physics
Thu.	25	Mohling, Franz	Concepts in Physics
Fri.	26	Malville, Kim	Life on Other Worlds
Mon.	29 June	Taylor, John	The Search for the Atom, the Nucleus, and Elementary Particles
Tue.	30	Zafiratos, Chris	Everyday Angular Momentum
Wed.	1 July	Parker, Gary	The Nearest Star
Thu.	2	Young, Stephen	Perception
Fri.	3	Shonle, John	Our View of the Universe Depends on our Physics
Mon.	6 July	Mankin, William	Computers
Tue.	7	Cooper, John	Science and Environment
Wed.	8	NCAR tour	Weather

Most of the lectures were held in the JILA Auditorium for one hour or slightly longer. Some of the comments that the students made about the lectures were:

"Very enjoyable and inspired me to think."
"Interesting because of his demonstrations."
"I enjoyed it very much. I really learned a lot."
"This had a lot of interesting things I didn't know."
"I really like it, but it was too short."
"It was good and educational, taught us something new."
"A talk on an interesting subject."
"He didn't just sit and rattle off a lot of figures and formulas."
"I really enjoyed all the lectures this week, they all said a lot to me."
"I caught it and never lost it. Dr. Zafiratos is a very good professor."
"It was kind of hard, but it was really interesting."

At the end of each week we asked the students to evaluate the lectures and panel discussions. All the presentations were well received by the majority of the students. About a fourth of the lectures seemed to be enjoyed immensely by all the students, while two of the lectures were considered boring or too hard. The lectures that were considered boring by some were interesting and helpful to others. We found that demonstration played a key role in holding the interest of the participants. The lecturers were asked to avoid difficult mathematics and scientific concepts, yet they found the students to be very knowledgeable about the subject matter, and were impressed by some of the questions asked. At the end of the lectures there was usually a lively discussion and on some occasions the students would remain during part of their lunch hour to work out the experiments or ask more questions.

The lectures were usually held in the JILA Auditorium, a comfortable and well equipped facility. On several occasions the lecture period was spent in other parts of the campus or in the Boulder community. The first week the students went to a nearby gold mine to hear about an experiment on measuring the speed of light being conducted in the mine. The second week they went to the National Bureau of Standards for a lecture on low temperature physics. The fourth week they visited the National Center for Atmospheric Research to hear about the latest work in meteorology. There was a tremendous amount of material contained in the lectures, but since we did not give any tests on the material covered in the lectures, it is difficult to evaluate how much the students retained. Many of the students took notes faithfully during the entire program and read them later at home or on the bus as they commuted to and from the campus.

The heavy concentration of the physical sciences during the lectures has been questioned as not being very practical, but we feel that it gives the program the unifying force needed to be successful.

Laboratory Groups

The students were each assigned to one of four laboratory groups. Since Stanford had emphasized the value of breaking up cliques and this was verified during the first year of our program, we had the counselor who selected the students divide the participants into four groups which broke up, as much as possible, any close previous friendship lines. These groups spent four afternoons a week in the Physics building (Telescope Group), the Cyclotron building, or the Joint Institute for Laboratory Astrophysics (Photography Group). The students stayed with the same group for the entire program.

The students during the laboratory sessions were supervised by faculty and graduate students who assisted them in various projects. The purpose was for the students to make something,

learn a skill, see what scientists do, and to learn something in the process. The labs were to provide an opportunity for individual initiative and personal interaction with a scientist. A more detailed description of what took place in each lab can be found in the following pages.

Members of each group took great pride in what their group was learning and making. On a couple of occasions the lab groups would plan some activity that gave them the opportunity to meet as a group outside the regular summer school day. The Cyclotron group had a swimming picnic and had made plans to meet again at an outing which was to take place two weeks after the program was over. The telescope group also had a swimming picnic at the Boulder Reservoir. The photography group spent an afternoon at Rocky Mountain National Park on a picnic and photography excursion.

A small library of books from the Life Science and Nature series was made available to the students in each of the laboratories. The students read the books during their spare time and often checked them out overnight.

In the process of completing the projects the students had an opportunity to express resourcefulness and learn secondary skills. For example, the stand for the telescope group's 120 power reflector telescope was made of materials collected from a junk yard. The students used the facilities of the machine shop to assemble the stand. The girls were as enthusiastic about this part as the boys and they did the machining themselves. The final product was an impressive forty pound telescope and stand which they took home at the end of the program.

On the last two mornings of the program each group told the other students about their projects. At this time it became apparent that they had learned a surprising amount of physics. The students who built telescopes displayed a good understanding of the optics of their telescopes.

We had a tremendous number of volunteers working in the laboratories. There were sometimes more supervisors than students. Many of the graduate students worked with the students every afternoon of the four-week period.

Photograph Lab Group (by John Ward)

On the first afternoon the entire group of students and staff met together and talked about some of the possibilities in photography - i.e., what makes a picture good. We then toured the dark rooms and began learning how to use the available cameras - without film. On Tuesday, we broke into three groups (led by Glaser, Parker and Ward) and walked around shooting pictures on the campus after a short talk on exposure principles by Glaser. There were two cameras per group, and everyone took turns working on various photographic problems. Late Tuesday afternoon, we

developed the group film and on Wednesday went through printing procedures. The remainder of the week was spent individually helping each student make his first print, usually from negatives he exposed on Tuesday. At the same time, some members of each group started shooting and developing "on their own".

We began the second week of the program by choosing more or less defined photo projects to work on for the remainder of the program. However, this was not rigidly structured and people generally went about shooting and printing what interested them most. The camera check-out system was never put into operation although the students were free to take them home at night and we managed to "lose" one camera. Each student continued to shoot, develop and print on his own for the remainder of the program and we tried to maintain sufficient flexibility in the absence of rigid scheduling to avoid major fluctuations in dark room use or camera demand. Generally things went well. One afternoon was spent on a field trip to Rocky Mountain National Park and another on a recreation trip to Boulder Reservoir (for which the use of most cameras was discouraged!).

By the fourth week, students put together their best prints and mounted them on display board with dry mounting tissue. These prints were placed on display at the final banquet.

Cyclotron Lab Group

The cyclotron group worked on a number of projects. One of these was the construction of a photocell controlled relay. This was borrowed from the Stanford Program. The kids had a good time thinking of different things to do with the device. A few of them got together with kids in the photography project and used the device for strobe photography. Another small project involved part of the group doing photography for a few weeks. Unfortunately, the cyclotron dark room is too small to allow the entire group to participate. Another project was a radioactive decay experiment in which the cyclotron was used to obtain radioactive isotopes which were then analyzed in terms of the characteristic exponential decay law. A project which evoked considerable interest involved building a 3-stage model rocket (the parts obtained from a local hobby shop). The final launching was quite impressive.

Telescope Lab Group

The telescope group followed the same lines as it had in 1969. An impressive reflector telescope was assembled by each student. Most of the parts (except the mirrors and eyepiece) were obtained from the junk yard. The result is a forty pound telescope that stands about five feet high.

Counseling

Mr. Salazar was able to arrange for the students to have the benefit of the counseling laboratory at the School of Education. Miss Jean Isbell, a graduate student and also a counselor at North High School, expressed an interest in doing intensive counseling for any student wishing such services. Some students took advantage of the counseling, but it is difficult to evaluate the results at this time. The best evidence is that several students asked if they could return to see Miss Isbell.

Student response to the counseling that has been available for the past two summers might suggest that counseling services be available in the future.

Friday Lectures

The last day of each week we varied the program somewhat by having special afternoon lectures in place of the laboratories. One of these lectures was on college admissions and financial aid. Panel members represented the community colleges, private colleges, state colleges and state universities. The panel was well received and students felt it was very informative. One comment made by a student: "I wish they would have the panel at a high school assembly."

Mr. Fred Carillo spoke on another Friday on the Educational Opportunity Program (EOP) that is in existence for the purpose of helping minority students to enroll in college. This talk was also well received and many students felt that the information given had cleared up a lot of their questions.

Father Torres gave a particularly effective lecture on the background of the Hispano in this country. The purpose of the talk was to explain to the students why their parents and grandparents are poor and lack education. He discussed the history of the Hispano in the Southwest beginning with the arrival of the Spanish colonialists. Using slides he showed the type of life the descendants of the colonialists carved out of the plains and mountains of northern New Mexico and southern Colorado. He discussed their art, their architecture, the place of religion in their lives, and their living patterns. He then talked about the impact of the western movement of the population and the industrialization in the agriculture and lumber industries which forced these people in the last several decades to move to the urban centers to find work. The talk was very well received by the students.

Absences an Visitors

The total number of absences was 19 out of a possible 520 student days, with eight of these absences falling on Friday, July 3, when many families had planned camping or traveling weekends. Thirteen of the students had a perfect attendance

record. We think this is an extremely good record and indicates that student interest was running high. On three occasions we had visitors that were invited by the participants. Visitors were welcomed at all times, but we failed to stress this to the students although it was mentioned several times.

Recreation

During the four weeks there were recreation activities that the students took part in. As mentioned previously the lab groups all took either swimming or photography excursions. Two big activities were planned and carried out. One activity was to the Boulder Reservoir and the other was a hiking trip into Rocky Mountain National Park. We feel these events made a positive contribution by allowing for interaction between the students, tutors, and volunteers in a relaxed, informal setting.

Many of the students took advantage of the recreation areas and equipment on the campus. Students were allowed to swim in the campus pool, and many boys spent part of their lunch hour playing basketball in the men's gymnasium. One of the students remained on an average of two nights a week to meet with a graduate student and former Olympic competitor to work out in gymnastics.

Student Visitations

Arrangements were made for students to visit and confer with faculty members from the schools of medicine, law, nursing and architecture. Catalogs describing the various programs offered at the University of Colorado were given to the students and if they had any interests, then some member in their field of interest was contacted and the student and faculty member had lunch together to discuss the profession.

Many students took advantage of the program and were excited not only to know more about the profession they had an interest in, but also because they became acquainted with faculty members.

It is recommended that this part of the program be expanded if possible.

Banquet

The culminating activity of the summer program was a banquet held on July 10 at 7:00 p.m. in the Aspen Room of the University Memorial Center. There were exactly one hundred persons in attendance. This included students, parents, tutors, faculty members, and several prominent members of the North High community, including Mr. Pete Shannon, Principal

of North High School, and his wife, Mr. Bernie Valdez, Director of Denver County Welfare, and his wife, and Mrs. Fernie Moore, Coordinator of the Youth Motivational Program with the Denver Public Schools.

The activity included a dinner, a display of telescopes, battery relay boxes, rockets, and pictures taken, developed and mounted by the students. The JILA Journal Newspaper was also passed out at this time. The documentary film produced by one of the discussion groups was shown immediately following the dinner.

The guest speaker of the evening was Mr. Bernie Valdez, who reminded the students of their good fortune in having the opportunity to take part in such a program. He also reminded the parents of their role in helping educate their children. His comments were well received.

Mike Mestas, one of the participants, was the Master of Ceremonies and did an excellent job. Four students presented three musical selections that involved singing and the playing of a guitar. Two of the students gave short talks thanking the staff and volunteers and then presented a plaque to the Physics Department. The plaque read:

IN APPRECIATION TO

PHYSICS DEPARTMENT

UNIVERSITY OF COLORADO

BOULDER, COLORADO

SUMMER 1970

The program was concluded by Dr. Willard Chappell when he presented a certificate of attendance and a scholarship of $120.00 to the 26 students who had attended the program.

Testing

An added feature to this year's program was the administration of the Strong Vocational Interest Inventory and the Kuder Vocational Interest Inventory. These tests were administered and explained to the students by Dick Grosz from the Department of Psychology. Dr. Grosz took care of the scoring and made arrangements to meet with the students while they were in their discussion groups. He felt that by meeting with a total

of six or seven students at a time, he would give each student more attention and answer their questions more effectively.

Dick Grosz stressed that the results of such inventories could be useful but were not the final word. He explained very carefully that the advantage of such an activity was that it might help make the students aware of the many possibilities that were open to them. They were also told that if the inventories confirmed what their interests were at the present time, that they should still continue to develop new interests.

The participants were given a copy of the scored answer sheets for their own use. Copies were also to be made available to Dr. Chappell, faculty-sponsor of the program, and to Mrs. Jean Isbell, teacher-counselor from North High School. It was decided that vocational counseling would be part of the follow-up.

We gave some thought last year to the possibility of obtaining objective, quantitative measurements of the success of the program. In connection with Dick Grosz of the University Counseling Service and Barbara Sanders of the Psychology Department, we started to work on a measurement procedure. After some initial groundwork we decided that the only ways to obtain meaningful results involved a considerable expense. It also involved considerable inconvenience to the administration and faculty at North High School. The problems involved in obtaining test groups and base line data are perhaps not insurmountable, but are not appropriate to the type of program we have.

Winter Follow-up Program

We found the winter program to be much more difficult to organize and run than the summer program. The difficulty arises from the varying times when the students are in school. With double sessions going on this coming year at North High the problem will only get worse. However, we did manage to have a winter follow-up even if it did not run as smoothly as we would have liked it to. We had three major social events which consisted of a C.U. football game, a dinner (arranged by the students), and a concert. These events helped cement the relations begun in the summer and to remind the students of our continuing interest.

In addition, we had a tutoring program consisting of graduate students and faculty who went to North High a few hours a week to help the students with their courses.

In a few cases we paid for the students to take a practice round of the S.A.T. or A.C.T. tests. Unfortunately, not as many students took advantage of this offer as we had hoped.

This year many of the students will be seniors. Therefore, one of the first activities will be to urge them to begin applying to colleges. We will supply them with application

forms for Colorado schools and give them information on financial aid. We will also continue the activities begun last year. The football game was a very good event because of its tie with the University. We hope to arrange to take them to a play at the University theater. Of course, we will continue the tutoring program.

Evaluation

It is very difficult, if not impossible, to obtain meaningful data on this type of program until the time when the students start college. To a large extent the evaluation must be subjective. From this point of view we believe the program was a success. The students, the parents, the staff and volunteer workers, and the members of the Hispano community who participated all felt enthusiasm for the program while in progress and since it ended.

On the last day we asked the students to fill out a questionnaire about the program. Some of the questions were to get their reactions and some were to help us in planning for next year. A total of 25 students filled out the forms. They were told that they did not have to sign their name.

Most of the questions were very subjective and therefore it is difficult to tabulate the answers. A summary of a few of the questions is given below.

1. Question: Has the program affected you in any special way at all? (comment)

   Response: Twenty-two said it had affected them in some way, while two said no. Two others did not know.

   Examples of what students wrote:

   "It has changed my attitude toward school and given me a greater sense of responsibility."

   "It made me more sociable with people, and helped to let out my ideas and not hold them back."

2. Question: What did you feel were the strengths of the program?

   Response: Students were pretty split on this question. The staff and tutors received 7 votes, lectures 6 votes, labs 6 votes, discussion groups, 4 votes, freedom allowed to students, 3 votes, and organization of the program, 2 votes.

3. Question: What do you feel were the weaknesses of the program?

   Response: 11 students thought there were no weaknesses; the rest were split on all the activities that took

place during the summer. Two students thought that the program being only four weeks long was a weakness.

4. Question: How do you feel about the length of the program? Too Long? Too short? Just right?

   Response: None of the students thought it was too long. 50% of the answers received indicated that they thought it was too short, while the other 50% thought it was just right.

5. Question: What would you have been doing had you not come to Boulder this summer?

   Response: Twenty said they would be working or looking for a job, while three said they would have attended summer school. The other two said they would have remained at home babysitting or helping out in some way.

6. Question: Has your coming to Boulder affected the way you look at school or college?

   Response: Every student agreed that they had been affected in one way or another.

   Examples: "Yes, because college looks more like a reality than a dream that is too far to reach."

   "I've never been to a college before. This gave me an opportunity to see what it is like."

7. Question: Has your coming to Boulder affected the rest of your family? How?

   Response: Twelve said yes to the above question and nine said no.

   Examples: "Yes, they became proud of me."

   "It had an effect on my parents in trying to encourage my sister and myself in going to college."

   "Yes, my parents have hope that I will go on to college and see that there is now a chance."

   "No, except in one respect, that being my Mom came home again."

   "Yes, slightly, because now I keep bugging them to save their money for me."

8. Question: Would you say that you learned much or little in the lectures?

   Response: Thirteen said they had learned much, while nine thought they had learned some. One student felt he had not learned anything in the lectures.

9. Question: Were the labs too long? Too short?

   Response: The group was divided in half. 50% thought they were just right and the other 50% thought they were too short. None of the students mentioned the labs being too long.

10. Question: Honestly, did the program motivate you toward college, or did it scare you away. Did it give you a more real picture of what college is like? Did it do anything at all for you? (comment).

    Response: Fourteen students thought it helped them in becoming more interested in college. Two thought it had had some effect, while two others were not sure. Several students failed to answer the question.

The participants were asked to respond to a total of 44 questions, and their answers seem to indicate that they did enjoy and profit from the program. Their fine attendance record is also good evidence that they felt the program was very worthwhile. Although the participants were better than average students, it was known that some of them had poor attendance records during the regular school year.

Student Comments on Program

"What I really enjoyed was the whole day to be truthful. I really got adjusted to liking the observatory in the morning and the lectures were really interesting. The lunch hour is just right, and then our photography group took pictures in the afternoon, and that was fun too."

"Then after we came back from lunch and listened to Father Torres. Man, I really liked the way he talked."

"This morning we had a discussion about ourselves and where we came from and all. That was fun and interesting."

"Yesterday was a lot of fun and was exciting. Even though we were having fun we learned a lot about the University, as well as our fellow students."

"The labs seem to be the best part of the day even if we make a few mistakes."

"Today we started out with a real good discussion. After that the lecture was real interesting as well as educational."

"Monday we got off to a good start. Our discussion group was great even though I didn't contribute."

"First we went to a UMAS class which I think was really good, then the lecture was super-neat."

"The program enabled me to see that college can help anyone if they try. It's a hard world and you need to know things to survive."

"The program helps me to look at things in a new light, a better light."

"It was too short, it seems like we just began."

"It has given me a wider look at all the opportunities that lay ahead just waiting."

Preliminary Results

The true test of the program is how many students do go to college. In that respect we believe we are doing very well indeed. Of the first year's group of 21 students, 17 graduated from high school this year. Two students dropped out because of severe family problems (broken homes in both cases) and will probably not continue their education. The other two who did not graduate this year will graduate next year.

At the present time eleven of the first year students have been admitted to college and promised sufficient financial aid. Most of these students are going to be either at the Boulder or Denver campus of the University of Colorado. One student will be in the "Project Go" program at Colorado State University, and another at the University of Northern Colorado.

Of the two juniors in last year's program, one is going to Knox College with scholarship aid and the other is still uncertain.

Another example of the success of the program is the fact that the people in charge of minority admissions at the University gave our students first priority on the available openings.

We would, of course, be happier if 100% were going to college. But in view of the fact that we did not take an easy group to work with, we are very pleased with the results.